

Hellcat™ Downhole Sensors

PROVIDING REAL-TIME MONITORING OF DOWNHOLE ESP EQUIPMENT TO ENHANCE OPERATIONAL EFFICIENCY

OVERVIEW

Summit ESP® – A Halliburton Service offers a suite of sensors that, in tandem with our advanced surveillance package, provides real-time monitoring of downhole electric submersible pump (ESP) equipment to enhance operational efficiency, minimize downtime, and optimize production.

Our M5-125, M5-150, and M6-150 sensors are engineered to monitor critical operating parameters to instantly head off any potential issues that could damage the ESP and result in expensive workovers and delayed production. The sensors ensure that downhole performance remains steady within predetermined limits, which, if exceeded, can shut down the ESP system.

Easy to install, operate, and maintain, Hellcat sensors continuously monitor intake pressure, intake temperature, motor temperature, vibration, and current leakage. The M6-150 sensor offers maximum protection by monitoring discharge pressure to pinpoint holes in the tubing, plugging, or similar issues that can adversely affect pump performance.

Each sensor communicates bottomhole pressures and temperatures over our existing ESP cable and directly to the Summit ESP variable-speed drive. The communication network includes a user-friendly interface for analyzing well performance in real time. The highly reliable capacitance transducer design ensures the most accurate readings, thus forewarning of issues that threaten the integrity of downhole equipment.

All Summit ESP sensors are easily connected to our real-time surveillance package, which allows operators to remotely adjust operating parameters to maximize run life and production.

FEATURES

- » Easy integration into Summit ESP variable-speed drives and switchboards
- » Sensor information is displayed directly on the drive interface
- » Simple, two-wire connection to the Summit ESP monitoring system
- » Remote access to surface and downhole information via the monitoring system
- » Custom alarming and notification configured directly on the drive

BENEFITS

- » Real-time monitoring and proactive problem solving to optimize production
- » User-friendly setup and operation, requiring no calibration and minimal training for field personnel
- » Prevents premature failures and associated workover costs
- » Requires no maintenance
- » Maximizes operational life by transmitting data through ESP cable, avoiding additional cable and installation costs



HAL122785

Hellcat™ Sensor Technical Information

Specifications	M5-125	M5-150	M6-150
Five Channels	Pi, Ti, Tm, Vxy, CI	Pi, Ti, Tm, Vxy, CI	Pi, Pd, Ti, Tm, Vxy, CI
Transducer Type	Capacitance	Capacitance	Capacitance
Maximum Intake Pressure	5,000 psi	6,500 psi	6,500 psi
Pressure Accuracy	± 0.5% Full Scale	± 0.5% Full Scale	± 0.5% Full Scale
Pressure Resolution	± 0.1 psi	± 0.01 psi	± 0.01 psi
Maximum Intake Temperature	125°C (257°F)	150°C (302°F)	150°C (302°F)
Temperature Accuracy	± 2° C	± 1° C	± 1° C
Temperature Resolution	0.1°C	0.1°C	0.1°C
Maximum Motor Temperature	400°C (752°F)	400°C (752°F)	400°C (752°F)
Vibration (x and y Axis)	18 g	10 g	10 g
Vibration Resolution	0.01 g	0.01 g	0.01 g
Current Leakage Range	0–50mA	0–50mA	0–50mA
Current Resolution	001 g	001 g	50 uA
Maximum Voltage	3,000 V	5,000 V	5,000 V
Diameter	3.75"	3.75"	3.75"
Length	38.0"	44.0"	49.85"
Housing Material	Carbon or Stainless Steel	Carbon or Stainless Steel	Carbon or Stainless Steel

The Hellcat™ M5-125 sensor measures intake pressure, temperature, motor temperature, vibration, and current leakage in a reliable five-channel design. The sensor has a maximum intake temperature of 257°F (125°C) and captures all the basic data required to protect your ESP motor and extend run life.

The Hellcat™ M5-150 sensor is an advanced model providing maximum protection of downhole components by monitoring vibration, current leakage, motor temperature, intake pressure, and intake temperature. The M5-150 has a maximum intake pressure of 6,500 psi and a maximum intake temperature of 302°F (150°C). To determine motor temperature, the M5-150 sensor uses a probe to measure the motor oil, which is critical for accurately identifying the conditions being experienced by the downhole equipment.

The Hellcat™ M6-150 sensor is selected when complete system data is critical. By gathering intake pressure, intake temperature, motor temperature, vibration, current leakage, and discharge pressure, the Hellcat M6-150 sensor gives a complete picture of the downhole operational condition. Changes in vibration identify mechanical component issues, while discharge pressure provides pump performance indicators.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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